

Applicants: Fullerton *et al.*
Application No. 09/537,692

REMARKS

Applicant respectfully requests reconsideration and further examination of the patent application under 37 C.F.R. § 1.111.

New Claims

Submitted herewith are claims 78-128 that cover various aspects of the present invention disclosed and fully described in the specification of the instant application in detail. Briefly, these claims relate to a method and apparatus for generating impulse radio waveforms using pulsers that are not triggered or enabled concurrently, i.e., at the same time, to generate respective pulse waveforms in accordance with states of an information signal. It is respectfully submitted that among other places in the specification, detailed support for claims 78-128 may be found in pages 26-40 of the specification.

Claim Objection

Claim 63 stands objected because of certain mislabeling informalities. The objected claim has been amended as shown above to correct the labeling. Applicant thanks Examiner for pointing out the inadvertent error.

Claim rejections under 35 U.S.C. § 102

Claims 42, 47-49, 54-56, 61-63, 68-69 stand rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,700,939 issued to McCorkle et al. (McCorkle). Applicant respectfully traverses the rejection because, for the reasons set forth below, McCorkle does not teach or suggest each and every one of the claimed limitations of the present invention.

In support of the rejection, the Action characterizes McCorkle as disclosing an impulse radio transmitter (FIGs. 1, 3, 4) comprising a timing generator (130 of FIG. 1) to receive a periodic timing signal (102 of FIG. 1) and an information signal (120 of FIG. 1) and to produce one of a first signal and a second signal based on the information signal and the periodic timing

signal; a first pulser (320, 324, 332 of FIG. 3) to receive the first signal (312 of FIGs. 3-4) and to produce a first impulse radio signal (340 of FIG. 3) consisting of a first type of impulse waveform (340 FIG. 4); a second pulse (322, 324, 334, of fig. 3) to receive a second signal (314 of FIG..3) and to produce a second impulse radio signal (342 of FIG. 3) consisting of a second type of impulse waveform (342 of FIG. 4), wherein the second type of impulse waveform is substantially an inverse of the first typed of impulse waveform; and a combiner (348 of FIG. 3) to combine the first impulse radio signal and the second impulse radio signal (352 of FIG. 4)) and thereby produce a flip modulated impulse radio signal (354 of FIG. 4).

It is respectfully submitted that the Action may not have fully appreciated how the present invention is distinguishable from McCorkle. In Col. 10, lines 53-62 and FIG. 1, McCorkle discloses a code modulated data 121 that is applied to a pulse forming network (131). The pulse forming network (131) includes a positive wavelet generator 103 and a negative wavelet generator 104. The positive wavelet generator 103 generates a positive wavelet 105 and the negative wavelet generator 104 generates a negative wavelet 106. In line 59, McCorkle states that "[p]ositive wavelet generator 103, and negative wavelet generator 104 produce a wavelet in response to an xmit clock signal 102." It is respectfully submitted that by making the positive wavelet generator 103 and negative wavelet generator 104 responsive to a common xmit clock signal 102, McCorkle teaches concurrent generation of the positive and negative wavelets. In other words, both wavelet generators 103 and 104 of McCorkle generate the corresponding positive and negative wavelets at the same time. Subsequently, a switch 107 in McCorkle select one of the positive or negative wavelets 105 and 106 based on the modulated code 121. Accordingly, McCorkle teaches a pulse generation approach where the xmit signal 102 causes the positive wavelet generator 103 and the negative wavelet generator 104 to generate the positive and negative wavelets 105and 106 at the same time. In short, for each clock signal, McCorkle produces two impulse radio signals concurrently and selects one.

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In contrast, the present invention offers a significant improvement over McCorkle by obviating the need to run two impulse waveform generators simultaneously. As claimed by the newly submitted claims 78-128, the present invention generates an impulse radio signal by first and second pulsers that generate corresponding first and impulse radio waveforms at different time. Unlike the teaching of McCorkle regarding concurrent generation of positive and negative wavelets, the first and second impulse radio waveforms of the present invention are not generated at the same time. Because McCorkle does not teach or suggest non-concurrent activation of waveform generators 103 and 104, an expressly required claim limitation, claims 78-128 are patentable in view of this reference.

Similarly, McCorkle does not teach or suggest one or more expressly required claim limitations in the rejected claims 42, 47-49, 54-56, 61-63, 68-69. Specifically, independent claim 42 requires an impulse radio transmitter that has a precision timing generator for receiving a periodic timing signal and an information signal to generate a first signal and a second signal. The transmitter also includes a first pulser responsive to the first signal for generating a first impulse radio signal, and a second pulser responsive to the second signal for generating a second impulse radio signal. The first impulse radio signal and second impulse radio signal consisting of first and second types of impulse waveforms, respectively. A combiner combines the first impulse radio signal and second impulse radio signal to produce a flip modulated impulse radio signal.

The Action characterizes block 130 of McCorkle's FIG. 1 as a precision timing generator. Having thoroughly reviewed the entire reference, it is respectfully submitted that McCorkle does not even describe the block that bears the reference numeral 130, let alone disclosing this block as a timing generator. Consequently, Applicant is at a loss as to how the Action has characterized block 130 as a precision timing generator. As best understood, this block includes a code modulator (comprising blocks 111 and XOR 114) that produces code modulated data applied to the pulse forming network described in Col. 10, lines 53-62. The

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Action also states that block 130 produces one of a first signal and a second signal. Again, as best understood, the output of block 130 is signal 108, which is described as the output of switch 107, which is used to select one of the positive or negative wavelets.

The Action also characterizes portions of FIG. 3 of McCorkle for disclosing the required first pulser and second pulser limitations of claim 42. According to McCorkle, however, FIG. 3 is "a simplified block diagram for a wavelet generator that generates a pseudo derivative-of-Gaussian (DOG) wavelet shape..." As such, FIG. 3 is not an impulse radio transmitter, rather it appears to be one embodiment of a pulse forming network 131 that produces a particular type of impulse waveform referred to by McCorkle as "a pseudo derivative-of-Gaussian wavelet shape." More specifically, Col. 10, line 63 to Col. 11, line 19 of McCorkle describe using two different pulse forming networks 131: one shown in FIG. 3 and another shown in FIG. 7. Thus, even assuming block 130 can be characterized as "a precise timing generator," as alleged by the Action, the same block also includes two pulsers (i.e., positive and negative wavelet generators 103, 104). In other words, a single prior art element characterized by the Action for disclosing one limitation, i.e., the precision timing generator that produces the first and second signals, is also characterized as including two other limitations of the claimed invention, i.e., the first pulser and second pulser, which are driven by the first and second signals. Finally, the Action characterizes block 348 of FIG. 3 as the combiner claim limitation. Again, the a prior art element characterized by the Action for disclosing one limitation, i.e., the precision timing generator that produces the first and second signals, is also characterized (in addition to including two other limitations that are used to characterize the first pulser and second pulser) as including yet another limitation of the claimed invention, i.e., the combiner. It is respectfully submitted that the characterization of McCorkle according to the Action can not support the claim rejections on anticipation grounds because such characterization fails to establish that McCorkle teaches each and everyone of the claimed limitations.

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The same arguments above generally apply to the Examiner's rejection of independent claim 49 except the timing generator of the present invention produces a first signal, a delayed first signal, a second signal, and a delayed second signal. Again, the key difference between the present invention and McCorkle is McCorkle always generates both a positive and negative waveform and then selects the output waveform using a switch controlled by an information signal. In contrast, pulsers of the present invention do not generate positive and negative pulse waveforms at the same time. Furthermore, McCorkle doesn't teach four modulation states, non-inverted, inverted, time-shifted non-inverted, and time-shifted inverted impulse waveforms, as does the present invention. McCorkle only teaches non-inverted and inverted impulse waveforms.

For the reasons sated above, Applicant respectfully traverse rejection of claims 43, 50, 57, and 64 under 103(a) as being unpatentable over McCorkle.

For the reasons sated above, Applicant respectfully traverse rejection of claims 44-46, 51-53, 58-60, and 65-67 under 103(a) as being unpatentable over McCorkle in view of Finn. Furthermore, Finn teaches a dual mode device that can function as a cellular telephone, an impulse radio, or both. The text identified by the Action concerning an enable signal concerns enabling an entire impulse radio not enabling a pulser. McCorkle clearly teaches both pulsers being enabled when they are clocked. It does not disclose pulsers being separately triggered or enabled according to the present invention. Finn doesn't cure the defects of McCorkle.

Claim rejections under 35 U.S.C. § 103

For the reasons sated above, Applicant respectfully traverse rejection of claims 43, 50, 57, and 64 under 35 U.S.C. 102(e) as being unpatentable over McCorkle.

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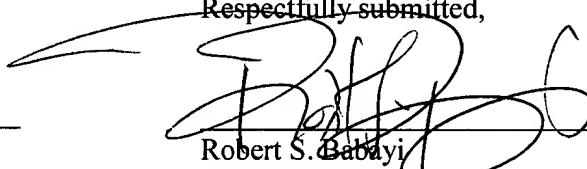
If the Examiner believes, for any reasons, that further communication will expedite prosecution of this application the Examiner is invited to telephone the undersigned at the number provided.

Applicant believes there are no additional fees associated with this reply other than those indicated. However, if this is incorrect, the Commissioner is authorized to charge any fees which may be required for this paper to Deposit Account No. 22-0261.

Accordingly, in view of the above amendments, it is believed that the remaining claims of the present invention are in condition for allowance.

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Respectfully submitted,



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